

LETTER REPORT
 PHASE I
 ADVANCED ENGINEERING
 AND
 DESIGN
 EDGARTOWN HARBOR, MASSACHUSETTS

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NEW ENGLAND DIVISION
 CORPS OF ENGINEERS
 SEPTEMBER 1977

EDGARTOWN HARBOR, MA - PHASE I AE&D REPORT

AUTHORIZATION DATA AND DESCRIPTION OF PLAN

1. The existing Federal navigation project at Edgartown Harbor, Mass. was authorized in 1937. It provided for a channel 17 feet deep, and 150 feet wide from the Outer Harbor to deep water in the Inner Harbor. Also authorized was the removal, to a depth of 12 feet, of the entire middle ground shoal inside and east of the entrance to the Inner Harbor. Under provisions of Section 201 of the Flood Control Act of 1965 the Senate Public Works Committee on 17 December 1970 and the House Public Works Committee on 15 December 1970 adopted resolutions approving the modification of the above project in accordance with the recommendations of the Secretary of the Army and the Chief of Engineers in Senate Document 91-108.
2. The authorized modification of the existing project provides for raising the barrier beach extending along the southerly side of Katama Bay from the main island of Martha's Vineyard toward, but not necessarily connected to, Chappaquiddick Island to an elevation of 16 feet above mean low water. It also provides for an anchorage in Edgartown Harbor, 10 acres in area and 6 feet deep, adjacent to Chappaquiddick Point. The anchorage would reduce boat congestion, increase navigation safety and accomodate future increases in boating. The project would also prevent a breach from recurring at the western end of the barrier beach along with the associated strong currents in the harbor that accompany such a breach. The source of material for the dike is Katama Bay, where selected areas would be deepened to more efficiently propagate, manage and exploit the shellfishing resource. The map attached to this report shows the existing project and authorized modification.

PROBLEMS AND NEEDS

3. Water resource needs as described in the survey report have not significantly changed since project authorization. Historically, a storm creates a breach at the middle or western section of the barrier beach, causing strong currents in Katama Bay and Edgartown Harbor. Navigation in the harbor channel and use of the anchorage space is restricted and sometimes hazardous. Additionally, each successive breach has caused further shoaling in the southern part of Katama Bay, which has damaged the once productive shellfish habitat. The most recent breach occurred on 2 February 1976.

PLAN FORMULATION

4. The phase I review was initiated by sending letters to all appropriate interests and agencies and by holding follow-up meetings. Early in the study the U.S. Fish and Wildlife Service, in coordination with the National Marine Fisheries Service and the Mass. Division of Marine

Resources, reformulated the original analysis of the shellfish benefits. Their major change is the reduction of habitat area that could benefit from the improvement from 500 to 100 acres. This drastically reduced the potential benefits to be derived from increased harvests of scallops and clams. Benefits were also up-dated for the recreational boat fleet using new boating values and standard Corps practices. Those benefits are summarized later in this report.

5. The updated costs and benefits resulted in a lack of economic justification for the project as formulated. Preliminary reformulation justified only the construction of the 10-acre anchorage, a portion of the overall original plan. A meeting of all the agencies and local interests was held in Edgartown to explain the new findings. The town requested time to submit information and specific site data which could be used to change the findings. This request was agreeable to all concerned and allowing detailed re-formulation studies to progress.

6. The construction of the 10-acre anchorage was further reformulated and found to be feasible. The use of land disposal on the barrier was investigated to determine whether the natural barrier could thus be reinforced its weakest points. This plan proved to be marginally justified and was too costly for the local interests when compared to use of closer land disposal areas. Use of nearby land disposal areas significantly reduced the pumping distance of dredged material and thus reduced the cost. The cost reduction achieved by discarding this plan was shared by local interests and improved the economic justification for constructing the anchorage.

7. The plan for anchorage development and its estimated cost sharing requirements were included as Article 68 in the Warrant for the annual town meeting held on 12 April 1977. The Article requested the voters to indicate their willingness to support the dredging of a 10-acre portion of Edgartown Harbor and further to participate financially in the construction of the proposed project. The voters rejected the article and thus withdrew the town's support for the project. A letter detailing the town's position is included in Appendix I.

ESTIMATED COSTS

8. The costs of the project were updated using the survey report and the recent condition surveys of the existing project. Early revision of the shellfish benefits and the resulting lack of economic justification did not warrant the gathering of additional field data for the entire project. The possible land disposal sites were investigated as to suitability, location, ownership and capacity. Table 1 lists the costs of several variations of the project.

Table I

Plan

A	Project Document (May 1969 Prices - including 10 acre anchorage)	\$1,855,000
B	Authorized Plan (1977 Prices - including 10 acre anchorage)	\$1,741,000*
C	10-acre Anchorage with Disposal on Barrier (1977 Prices)	\$530,000
D	10-acre Anchorage with nearby land Disposal (1977 Prices)	\$260,000

*Decrease in cost due to decrease in estimated unit price for dredging.

BENEFITS

9. The original report by the Fish and Wildlife Service stated that 570 acres of shellfish habitat would be improved by the proposed project. Estimates of annual harvests per acre ran as high as 200 bushels for hard clams and 50 bushels for bay scallops. The Service concluded that stabilization of the barrier beach would generally result in the re-establishment of a significant commercial shellfishery, contributing to year-round employment and thus benefiting the entire island. An updated report issued 30 May 1975 by the Fish and Wildlife Service was significantly more conservative. The benefit analysis was split into two parts; benefits from the actual dredging and benefits resulting from stabilization of the barrier beach. According to the Service, dredging the proposed 70 acres would result in an annual harvest per acre of 7 to 50 bushels of clams and 25 bushels of scallops. Both of these figures are significantly lower than the estimates in the first report.

10. Elimination of shifting sands due to construction of the improved barrier beach would result in additional benefits. The actual size of the stabilized area is not known but figures were as high as 500 acres in the first report. The number of acres has been reduced by the Service in the second report to a more realistic value of 100 acres. Of these 100 acres, 30 are intertidal and the remaining 70 are less than 6 feet deep at mlw and thus have potential as harvest areas. The Fish and Wildlife Service assumed that the stabilized habitat will have the same production rate as the dredged area. The 30 May 1975 report is included in Appendix I.

11. The recreational boating benefits were computed using boat depreciation values of 1976-77. Table 2 shows the annual benefits for the shellfish and boating categories. Table 3 summarizes the annual costs and benefits.

Table 2
Summary of Benefits*
(All Values \$1,000)

<u>Plan</u>	<u>Shellfish Resource</u>	<u>Recreational Boating</u>	<u>Total</u>
A			
Project Document (1969)	@4-7/8% 524.0	63.6	587.6
	@6-3/8% 496.0	60.4	556.4
B			
Authorized Plan (1976)	17.7	112.3	130.0
C and D			
10-acre anchorage 1976	0	40.9	40.9

*Benefits are equivalent annual benefits (net) computed using an 6-3/8% interest rate except where indicated.

Table 3*

<u>Plan</u>	<u>First Cost</u>	<u>Annual Costs</u>	<u>Annuals Benefits</u>	<u>BCR</u>
A Project Document	1,855	162.7	587.6	3.6
B Authorized Plan	1,741	163.5	130.0	.80
C				
10 acre Anchorage W/ Far Away Disposal	530	36.9	40.9	1.1
D				
10 Acre Anchorage W/ Nearby Land Disposal	260	18.9	40.9	2.2

*All costs in thousands.

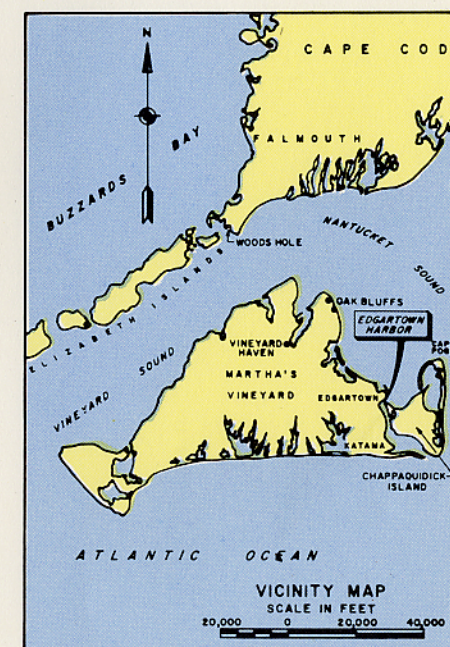
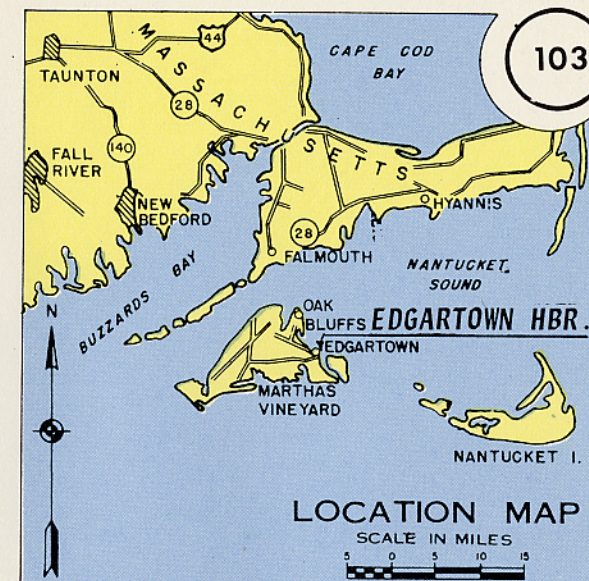
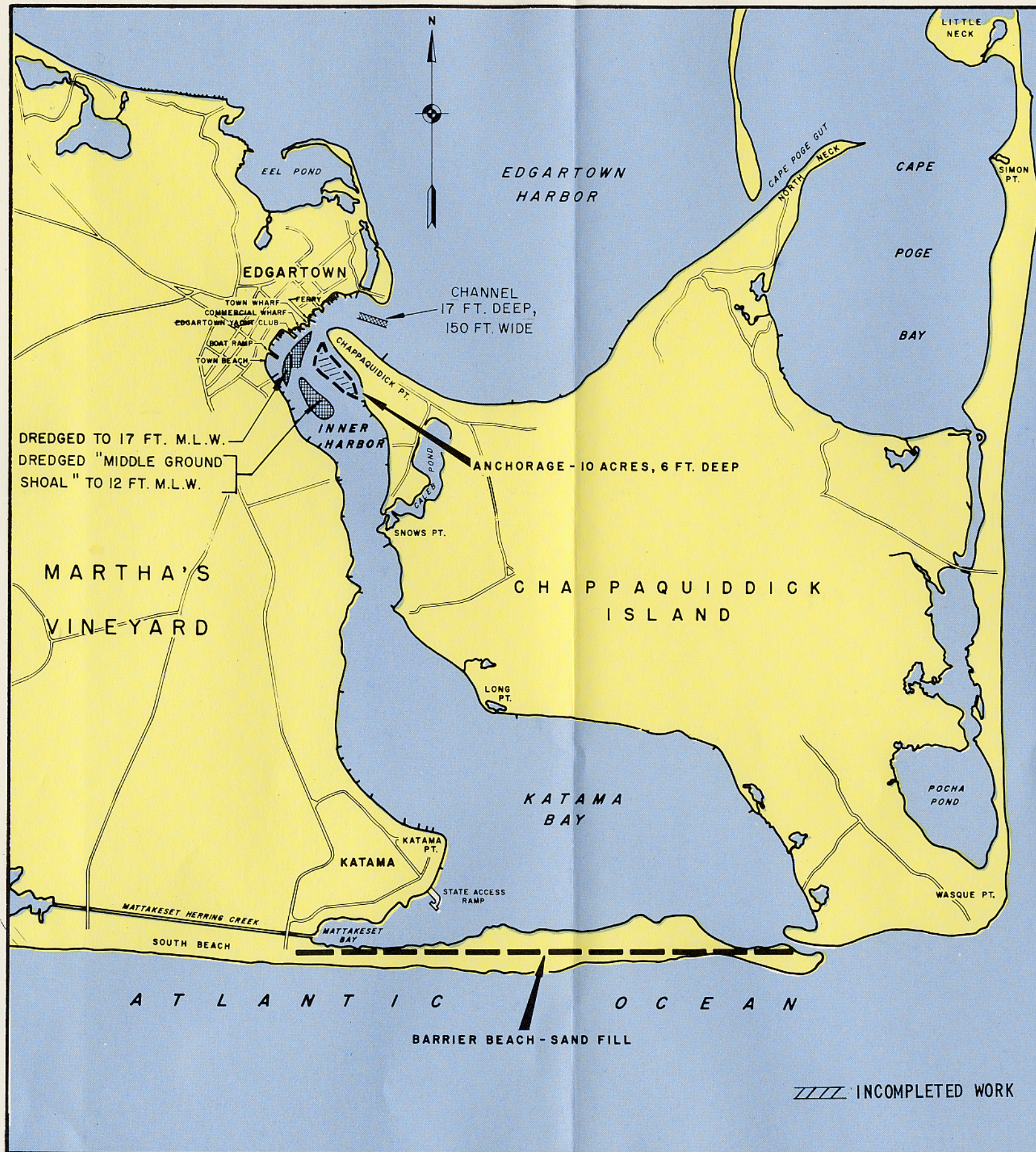
**Annual costs includes maintenance.

CONCLUSIONS AND RECOMMENDATIONS

12. The Phase I study has updated the costs and benefits of the authorized modification to the Federal navigation project at Edgartown Harbor, Mass. The project as authorized was found to lack economic justification due to a reduction of shellfish resource benefits. The project was reformulated for construction of the 10-acre anchorage portion of the modification. The anchorage was justified, but the town of Edgartown withdrew support for the project at the annual town meeting on 12 April 1977. Following that vote, all planning and investigations were concluded.

13. It is recommended that the authorized modification for Edgartown Harbor, Massachusetts be placed in the inactive category.

JOHN P. CHANDLER
Colonel, Corps of Engineers
Division Engineer



EDGARTOWN HARBOR MASSACHUSETTS

30 SEPTEMBER 1976

SCALE IN FEET
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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS.

APPENDIX I

1. Letter from Town of Edgartown dated 25 April 1977
2. Fish and Wildlife Service Report dated 30 May 1975



TOWN OF EDGARTOWN
OFFICE OF
SELECTMEN -- HEALTH

TELEPHONE:
SELECTMEN - 627-4033
P. O. BOX 168
EDGARTOWN, MASSACHUSETTS 02539

April 25, 1977


Mr. John P. Chandler, Colonel
Corps of Engineers
Department of the Army
424 Trapelo Road
Waltham, Massachusetts 02154

Dear Mr. Chandler:

Please be advised that at the Annual Town Meeting held on April 12, 1977, the voters rejected an article that we had presented to them asking for the voters indication whether or not they were willing to support the dredging of a 10 acre portion of Edgartown Harbor near Chappaquiddick Point. It is our understanding that as a result of this vote, the project will be shelved for the time being. Along those same lines, we will return the right of entry forms to the various owners along Lighthouse Beach which had been executed by the abutters for the purpose of allowing the Corps to go over their property for a survey and exploration purposes.

Very sincerely,

BOARD OF SELECTMEN


Peter O. Bettencourt
Executive Secretary

POB/cec

Appendix I



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Post Office and Courthouse Building
BOSTON, MASSACHUSETTS 02109

MAY 30 1975

*District Engineer
New England Division, Corps of Engineers
424 Trapelo Road
Waltham, MA 02154*

Dear Sir:

Enclosed herewith is the Supplemental Report of the U. S. Fish and Wildlife Service on a plan for proposed modification to the Edgartown Harbor navigation project in Dukes County, MA.

Sincerely yours,

Richard E. Griffith
Regional Director

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EDGARTOWN HARBOR, EDGARTOWN, DUKES COUNTY, MA

Supplemental Report of the U. S. Fish and Wildlife Service
on a plan for proposed modification to the Edgartown
Harbor navigation project by the U. S. Army Corps of
Engineers, New England Division.

May 19, 1975

I. Preface

This project was modified by resolutions of the Public Works Committees of the House of Representatives and Senate on December 15 and 17, 1970, respectively. This report is prepared and submitted under authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), in cooperation with the Massachusetts Division of Marine Fisheries and the National Marine Fisheries Service. The Service last reported on this project on June 19, 1968.

At present the advanced engineering and design for the proposed modification is being initiated. A two phase system of design is used. Phase I is the preparation of a Plan Formulation Memorandum which assesses numerous factors that may have changed between the time of initial report and actual design. Phase II is the functional design of the project modification. This report is the result of our reassessment of the proposed modifications in light of current information.

II. Project Description

We understand that the authorized modification provides for raising the barrier beach extending along the southerly side of Katama Bay from the main island of Martha's Vineyard toward, but not necessarily connected to, Chappaquiddick Island, to an elevation of 16 feet above mean low water; and for an anchorage in Edgartown Harbor, 10 acres in area and 6 feet deep, adjacent to Chappaquiddick Point. The source of material for the raised barrier beach would be areas in Katama Bay selected for potential improvement in shellfish habitat. Approximately 70 acres would be dredged to a depth of 4 to 10 feet. Disposal of the dredged material from the anchorage would be coordinated with interested State and Federal agencies.

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III. Environmental Setting Without-the-Project

Commercial shellfishing makes a significant contribution to the economy of Edgartown. The 1974 commercial shellfish catch was valued at about \$230,000. Of the total \$183,000 was attributed to scallop harvest. About \$34,000 was attributed to the quahaug harvest while the remaining value was due to soft shell clam. The commercial shellfishermen concentrate their efforts on the harvest of scallops for several reasons:

1. Ease and success of harvest;
2. Price for product; and
3. Availability of market for product.

Katama Bay presently contains populations of soft shell clams, quahaugs, and scallops. However, the populations are not harvested commercially to any great extent. There are other areas in the town, especially Cape Poge Bay, where conditions are more suitable for commercial shellfish harvest. Much of Katama Bay is very shallow and this presents navigation problems to shellfishermen. Most of Katama Bay is shown as being less than 6 feet deep on the 1967 Coast and Geodetic Survey Chart No. 261. Close to one quarter of the area of Katama Bay southeast of a line from Long Point to Katama Point was intertidal at that time. These approximate conditions still exist.

The barrier beach at the south end of Katama Bay has closed itself off since the late 1960's. However, essentially no commercial quahaug fishery has developed in Katama Bay.

Historical information on the frequency and duration of breach occurrence shows that on the average two breaches would occur during a 50 year project life. Without the project, it can be assumed that the barrier would breach again in the future unless some other effort is made to stabilize the dunes, especially in several existing low areas. Presumably the breach would gradually move easterly and close itself off again because of the naturally occurring processes that have operated in a similar manner in the past. Without a project, the area immediately around the breach, where shifting sands interfere with setting of shellfish spat and cover existing shellfish beds, would periodically have lowered shellfish populations because of the breach.

IV. Environmental Impacts With-the-Project

Dredging 70 acres to the depth of 4 to 10 feet is expected to improve that area for scallop production. It is estimated that on the average such an area could produce 25 bushels of scallops per acre per year. With scallops valued at \$15 per bushel, this could mean an average annual gross benefit of \$26,250.

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It is possible that the market for quahaugs will become more favorable in the future. If we assume that dredging the 70 acres would improve quahaug habitat, that a harvestable quahaug population becomes established, that harvest of quahaugs varies from 7 to 50 bushels per acre annually, that an average price for quahaugs is about \$15 per bushel, then the annual benefit to the quahaug fishery could vary from \$7,350 to \$52,500. An average annual gross benefit to the quahaug fishery could be about \$30,000.

With the project, the loss of shellfish habitat due to shifting sands in an area around the breach would be eliminated. The area of bottom that would be stabilized is not known. Estimates range from 100 to 500 acres. Five hundred acres seems like a high estimate since the total area of Katama Bay southeast of the line from Long Point to Katama Point is about 850 acres.

Intuitively the 100 acre figure seems more realistic. About 30% of the southern part of Katama Bay is intertidal; the other 70% is chiefly less than 6 feet deep at mean low water. Thus, perhaps 70 acres of potential scallop and quahaug habitat and perhaps 30 acres of potential soft shell clam habitat would be stabilized by the project and could be benefited during the two 7 1/2 year periods of maximum benefits when a breach would have been present without the project. However, the shellfish warden from the Town of Edgartown considers only one-third of Katama Bay along the barrier productive shellfish flat at present. Thus, potential benefits would only result when the productive areas are stabilized.

If we assume that this stabilized habitat would have the same potential quahaug and scallop productivity as the 70 dredged acres, then the average annual benefits resulting would be about 10% of those given for the dredged area because the stabilized acres would be benefited only during 15 of the project's 50 years, and only one-third of the area is considered productive. This benefit would average about \$3,000 annually for scallops and about \$3,000 annually for quahaugs.

There is a possibility of project benefits to the soft shell clam commercial fisherman also. These potential benefits would result from the prevention of the periodic breach with the accompanying shifting sands. If we assume that there is an increased demand for soft shell clams in the future, that a harvestable population becomes established in the productive protected area, that a total potential production of 500 bushels per year is harvested, and that the price per bushel is \$15, then a possible annual benefit of \$7,500 might result from the project during those years when a breach would have occurred without the project. This would be an average annual benefit of \$2,250.

Thus, the total gross annual average benefits of the project to the commercial shellfishery of the area could be approximately \$65,000.

It is assumed that recreational shellfishing needs in Edgartown will be met whether or not the project is implemented. There would be no benefits to the recreational shellfishery resulting from this project.

V. Discussion

The potential benefits described in this report are thought to be more realistic than those described in our report of June 19, 1968. We feel that our former report was in error in ascribing benefits to a total of 500 stabilized acres and by not taking into account that benefits on the stabilized acreage could be attributed only to those years when a breach would be present without the project.

The data and projections on potential shellfish benefits contained in this report supersede those in our June 19, 1968, report.

In addition to the benefits to the commercial shellfishery that may result from the project, there are certain negative aspects. The barrier beach at the south end of Katama Bay is protected by Massachusetts wetlands laws. Chapter 130, Section 105 of the Massachusetts General Laws includes low land subject to tidal action or coastal storm flowage under the term "coastal wetlands." The Commissioner of the Massachusetts Department of Natural Resources may put restrictive orders on filling or altering such "coastal wetlands." The Wetland Restriction Act is not yet in effect for Edgartown. The proposed restriction will be recorded in about two months. Before any alteration schemes are started, the state law should be complied with.

The barrier beach is a naturally functioning system. It has been formed by natural processes over the ages and the same processes are still working in the area. Norton's Point (the barrier beach) has been recognized as a unique natural area in the Southeastern New England Study of Water and Related Land Resources, Interim Report, Environmental Base Study, SENE Study, done for the New England River Basins Commission by the University of Massachusetts' Department of Landscape Architecture and Regional Planning. Before such a unique natural area is altered, it must be determined whether the significant educational and scientific values of such areas outweigh the benefits that might result from their alteration. The arguments for preserving our natural heritage must be considered although it is difficult to put a dollar value on their importance.

VI. Recommendations

Because of the reduced estimate of potential commercial shellfish benefits that can be attributed to the project, it appears the benefit/cost ratio may be too low to justify the project. If this is the case, the U. S. Fish and Wildlife Service recommends:

1. The barrier beach may be stabilized by smaller scale projects such as attempting to halt erosion of the dunes in low spots by using snow fence or old Christmas trees to accumulate sand.

2. If the dredging of the anchorage stands on its benefits to the navigational problems, the selection of a disposal site for the dredged spoil be coordinated with the Massachusetts Division of Marine Fisheries, the National Marine Fisheries Service, and this Service.

Please advise us of any changes in your project plan so that we can prepare a new report, if necessary.

Sincerely yours,

Richard E. Griffith
Regional Director

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